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10/667,974	09/23/2003	Norifumi Hasegawa		7883

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LORUSSO, LOUD & KELLY
3137 Mount Vernon Avenue
Alexandria, VA 22305

EXAMINER

HAILEY, PATRICIA L

ART UNIT PAPER NUMBER

1755

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,974

Applicant(s)

HASEGAWA, NORIFUMI

Examiner

Patricia L. Hailey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7 and 10-30 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Applicant's remarks and amendments, filed on March 11, 2005, have been carefully considered. Claim 4 has been canceled; new claims 20-30 have been added.

Claims 1-3 and 5-30 are now pending in this application.

Specification

1. The substitute specification filed on March 11, 2005, has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because: (1) the text of the added subject matter is not shown by underlining, nor is the text of deleted subject matter shown either by strikethrough or by double-bracketing, and (2) because the clean copy of the substitute specification contains a paragraph directed to "cross-reference to related applications" that was not present in the original specification, nor is said paragraph present in or added to the marked-up copy via underlining. Additionally, this paragraph does not include reference to Japanese Application No. 2003-139431, of which the instant application also claims priority under 35 USC 119.

See MPEP 608.01(q).

Applicant's marked-up copy of the Substitute Specification contains hand-written additions and deletions. It is respectfully suggested that the additions and deletions be made in this manner (taken from page 1, lines 13 and 14 of Applicant's originally filed specification):

~~A combination of the~~ The catalyst layer ~~and the catalyst layer~~ constitutes the electrodes of the fuel cell.

Withdrawn Objections and Rejections

The objections to the drawings stated in the previous Office Action have been withdrawn.

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The objection to the disclosure for the informalities contained therein, stated in the previous Office Action, is held in abeyance pending a resubmission of a proper Substitute Specification by Applicant.

Withdrawal of Indication of Allowable Subject Matter

The indication of allowable subject matter in claims 7-10 and 12-18, stated in the previous Office Action, is withdrawn in view of the discovered prior art to Miyabayashi et al. (U. S. Patent No. 4,725,422). A rejection of these claims in view of this reference is included in this Office Action.

New Grounds of Rejection

The following New Grounds of Rejection are made in view of Applicant's amendments, of the Examiner's reconsideration of the pending claims, and of the discovery of (a) copending Application Serial No. 10/509,752, and (b) the newly discovered references to Shen et al. (U. S. Patent No. 5,573,648) and Miyabayashi et al. (U. S. Patent No. 4,725,422).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. Claims 1-3, 5-11, 18, and 20-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The subject matter present in the claims but not described in the Specification is the phrase "to be insoluble", which has been added to replace the phrase "not to dissolve".

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-3, 5-10, 12, and 14-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-6, 8-12, and 14-17 of copending Application No. 10/509,752.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the respective sets of claims are both directed to mixed conductors, but do not

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define the mixed conductors in identical terms. However, the claims correspond to one another in the following manner:

Instant claims 1-3 and 7-9 corresponds to claims 1, 2, and 8-11 of the copending application. Instant claims 5, 6, and 10 correspond to claims 4-6, respectively, of the copending application. Instant claims 12 and 14-16 correspond to claims 12 and 15-17, respectively, of the copending application. Instant claim 17 corresponds to claim 14 of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102/35 USC § 103

6. Claims 1, 5, and 6 stand, and new claims 20, 29, and 39 are, rejected under 35 U.S.C. 102(b) as being anticipated by Velasco et al. (U. S. Patent No. 4,731,705).

7. Claims 2, 3, and 11 stand, and new claims 24 and 25 are, rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Velasco et al. (U. S. Patent No. 4,731,705).

Velasco et al. teach a cell for an electric double layer capacitor including a membrane formed from a solid protonic conducting electrolyte separating two electrodes, each of which is a composite electrode formed by a mixture of at least one electronic conductor and a solid electrolyte. See the Abstract of Velasco et al., as well as Figure 1, which shows a sectional view of Patentees' cell. The configurations of electrodes 1 and 2 and membrane 3 are considered to read upon the claim limitation "fixed together by...".

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Examples of the electrolyte include uranyl phosphate and zirconium phosphate, derivatives thereof, and other protonic conductors having high protonic conductivity. See col. 4, lines 15-35 of Velasco et al. This disclosure is considered to read upon the claim limitation "proton conductor".

With respect to the electrodes, which comprise at least one electronic conductor and a solid electrolyte, the solid electrolyte may be different from or identical to the one forming the aforementioned membrane, and the electronic conductor may be activated carbon black or acetylene black. See col. 4, lines 39-54 of Velasco et al.

In view of these teachings, Velasco et al. anticipate claims 1, 5, 6, 20, 29, and 30.

With respect to claims 2, 3, 11, 24, and 25, Velasco et al. also anticipate these claims; however claims 2, 3 and 11 recite the phrase "obtained by", which is considered a product-by-process limitation. In view of this limitation, it is considered that "[A]ny difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show that the same is a process of making." In re Brown, 173 U.S.P.Q. 685 and In re Fessmann, 180 U.S.P.Q. 324.

8. Claims 1, 6, 7, 18, and 20-30 are rejected under 35 U.S.C. 102(b) as anticipated by Shen et al. (U. S. Patent No. 5,573,648).

Shen et al. teach a CO gas sensor having a solid protonic conductive membrane that separates a sensing electrode and a counter electrode, wherein each of the electrodes can be made

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of mixed protonic-electronic conductors (see Abstract). See also Figure 2 and col. 5, line 65 to col. 6, line 1 of Shen et al.

The proton conductor for both the sensing and counter electrodes is preferably a copolymer based on a tetrafluoroethylene backbone, e.g., Nafion®. Further, the protonic conductive membrane may be substantially composed of a solid, perfluorinated ion-exchange polymer, or may be substantially composed of a metal oxide protonic conductor electrolyte material. Examples include $\text{H}_3\text{W}_{12}\text{PO}_4 \cdot 29\text{H}_2\text{O}$ (tungstophosphoric acid). See col. 6, line 62 to col. 7, line 14 of Shen et al.

In Figure 10 of Shen et al., a mixed protonic-electronic conductive electrode is shown, having a protonic conductive membrane, a current collector electrical lead, and a variety of amplified particles consisting of (1) an electronic conductive phase (element 82) and (2) a protonic conductive phase (element 84). There is a creation of both hydrogen ions and electrons at points of contact between (a) (1) and (2), (b), between the protonic conductive membrane and (1), and (c) between the current collector electrical lead and (2), all of which are represented by element 86. The points of contact between elements 82 and 84 are considered to read upon Applicant's claim limitations regarding the proton and electron conductors being "fixed together by... covalent bonding". See also col. 9, line 45 to col. 10, line 22 of Shen et al., which provides a more detailed description of Figure 10.

Shen et al. at col. 10, line 55 to col. 11, line 47 disclose additional examples of counter and sensing electrodes, including carbon (considered to also read on "graphite", as well as "inorganic material"), various metals such as platinum, titanium, nickel, palladium, etc. (considered to read upon the claim limitations regarding the "noble metal").

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In view of these teachings, Shen et al. anticipate claims 1, 6, 7, 18, and 20-30.

9. *Claims 1-3, 10-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. (U. S. Patent No. 5,573,648) in view of Miyabayashi et al. (U. S. Patent No. 4,725,422).*

Shen et al. is relied upon for its teachings in the above 102(b) rejection. Shen et al., while teaching the claimed electron conductor, does not teach or suggest the claim limitations regarding how the conductor is obtained.

Miyabayashi et al. teach carbonaceous electrode materials made via pyrolysis of organic materials capable of forming a graphite structure. See col. 2, lines 23-37 of Miyabayashi et al.

Examples of the organic materials are disclosed at col. 3, line 6 to col. 7, line 59. This disclosure is considered to read upon Applicant's "aromatic hydrocarbons", "aliphatic hydrocarbons", and derivatives thereof.

Miyabayashi et al. also disclose that the pyrolysis of the organic materials can be performed under conditions of inert gas. See, inter alia, col. 7, lines 50-65 of Miyabayashi et al.

The carbonaceous materials are suitable for formation into electrode materials (col. 11, lines 7-17 of Miyabayashi et al.), as well as for uses as electrical and electronic materials in solar cells, sensors, capacitors, and conductors. See col. 12, lines 7-10 of Miyabayashi et al.

For these reasons, it would have been obvious to one skilled in the art at the time the invention was made to have modified the teachings of Shen et al. by incorporating therein the carbonaceous/electrode materials of Miyabayashi et al., and thereby obtain Applicant's claimed invention. The carbonaceous materials disclosed in Miyabayashi et al., produced by pyrolysis of

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organic materials, are considered to be suitable sources for the electronic conductors and/or sensors disclosed in Shen et al.

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Allowable Subject Matter

11. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art cited in this Office Action do not teach or suggest the claim limitations regarding the fixing of the electron conductor to the proton conductor via inclusion or intercalation.

Priority

13. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

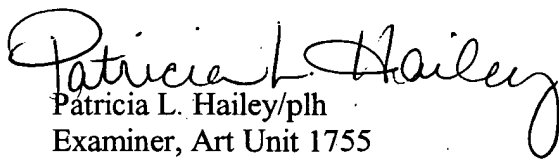
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

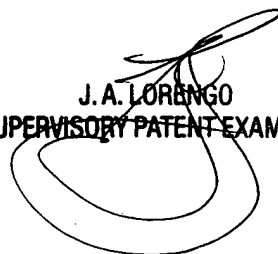
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patricia L. Hailey/plh
Examiner, Art Unit 1755
May 30, 2005


J. A. LORENZO
SUPERVISORY PATENT EXAMINER